

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 1, 2, and 4-15 are presently pending in this case. Claims 1 and 9 are amended by the present amendment. As amended Claims 1 and 9 are supported by the original disclosure,<sup>1</sup> no new matter is added.

In the outstanding Official Action, Claims 1, 2, and 4-13 were rejected under 35 U.S.C. §103(a) as unpatentable over Tharp (U.S. Patent No. 6,210,549) in view of TW 453,508 (hereinafter “TW ‘508’”) and further in view of Russell et al. (U.S. Patent No. 4,026,775, hereinafter “Russell”); and Claims 14 and 15 were rejected under 35 U.S.C. §103(a) as unpatentable over Tharp in view of TW ‘508 and Russell and further in view of Johnson et al. (U.S. Patent No. 3,607,685, hereinafter “Johnson”).

With regard to the rejection of Claims 1 and 9 as unpatentable over Tharp in view of TW ‘508 and Russell, that rejection is respectfully traversed.

Amended Claim 1 recites in part:

***a first heat exchanging means which is provided around the electrolytic cell*** to heat and cool an electrolytic cell body;

an outer frame which is sealed and disposed further surrounding outside of the first heat exchanging means with space;

a decompression or a vacuum insulating zone which is formed in the outer frame; and

a thermometer which measures temperature of the electrolytic bath,

wherein the first heat exchanging means includes a pipe through which a heat exchange medium flows and a heating-cooling apparatus which heats and cools the heat exchange medium based on temperature information of the electrolytic bath supplied from the thermometer, and ***the insulating zone insulates the electrolytic cell and the pipe.***

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<sup>1</sup>See, e.g., the publication of the specification at paragraph 47 and Figure 1.

In amended Claim 1, the first heat exchanging means is provided around the electrolytic cell, and the pipe and the electrolytic cell are surrounded by the insulating zone and the outer frame. For this reason, the electrolytic cell and the pipe through which a heat exchange medium flows are insulated from the outside by the insulating zone, and this allows the first heat exchanging means to perform heating and cooling to freely control the temperature of the electrolytic cell irrespective of the outside environment. Furthermore, since the heat insulation of the electrolytic cell and the heat insulation of the pipe (first heat exchanging means) can be simultaneously performed by the outer frame and the insulating zone, not only the heat reserving of the electrolytic cell and the heat exchange medium but also the heating-cooling thereof are realized by a simple structure, and furthermore the energy concerning the heating is extremely efficiently utilized.

The outstanding office action cited Tharp as describing “first heat exchanging means,” TW ‘508 as describing “an outer frame” and “a decompression or a vacuum insulating zone,” and Russell as describing “a thermometer” as recited in Claim 1.<sup>2</sup> However, none of Tharp, TW ‘508, Russell, and Johnson describe the insulating zone recited in amended Claim 1 and the structure that *the insulating zone insulates the electrolytic cell and the pipe*. Therefore, the aforesaid effect of the structure is not exerted by these cited documents.

It is respectfully submitted that the simultaneous insulation and cooling of the electrolytic cell recited in Claim 1 is not achieved even if an insulating zone and an outer frame are added to the structure of Tharp. Column 9, lines 41-42 of Tharp describe that a cooling media is introduced through the inlet 11. When the temperature of the electrolytic bath is rapidly decreased for some reason (e.g. excessive operation of the cooling system), the situation may get worse (e.g. the electrolytic cell is solidified) if the heat of the cooling media

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<sup>2</sup>See the outstanding Office Action at pages 2-3.

is preserved. On the other hand, because of the inclusion of the means for heating/cooling the heat exchange medium, the claimed invention makes it possible to quickly replace the cooling medium with the heating medium and preserve the heat of the heating medium. It is therefore possible to swiftly respond to a change of the situation by freely controlling the temperature of the electrolytic cell including the electrolytic bath.

The apparatus of TW '508 includes an arrangement which prevents the heat of the heating means from escaping toward directions away from the heating target. TW '508, however, fails to disclose any means for simultaneously preserving the heat of the electrolytic cell and the heat of the heating target. Thus, it is respectfully submitted that TW '508 does not teach or suggest “an outer frame” and “a decompression or a vacuum insulating zone” as defined in amended Claim 1.

Finally, although Johnson may describe using molten salt for electric insulation, Johnson fails to describe that an electrolytic cell and pipe are thermally insulated from the outside, and the heat of the electrolytic cell and the heat of the heating target are simultaneously preserved.

Therefore, it is respectfully submitted that the proposed combination of Tharp, TW '508, and Russell does not teach or suggest “first heat exchanging means,” “an outer frame,” and “a decompression or a vacuum insulating zone” as defined in amended Claim 1. Consequently, amended Claim 1 (and Claims 2, 4-8, 12, 13, and 15 dependent therefrom) is patentable over Tharp in view of TW '508 and Russell.

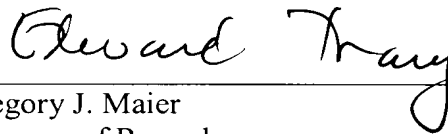
Amended Claim 9 recites similar elements to amended Claim 1 without invoking 35 U.S.C. §112, sixth paragraph. As the proposed combination of Tharp, TW '508, and Russell does not teach or suggest “a jacket,” “an outer frame,” and “a decompression or a vacuum insulating zone” as defined in amended Claim 9, amended Claim 9 (and Claims 10, 11, and 14 dependent therefrom) is also patentable over Tharp, TW '508, and Russell.

With regard to the rejection of Claims 14 and 15 as unpatentable over Tharp in view of TW '508 and Russell and further in view of Johnson, it is noted that Claims 14 and 15 are dependent from Claims 1 and 9, and thus are believed to be patentable for at least the reasons discussed above with respect to these claims. Further, it is respectfully submitted that Johnson does not cure any of the above-noted deficiencies of Tharp, TW '508, and Russell. Accordingly, it is respectfully submitted that Claims 14 and 15 are patentable over Tharp in view of TW '508 and Russell and further in view of Johnson.

Accordingly, the pending claims are believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,  
MAIER & NEUSTADT, P.C.



Gregory J. Maier  
Attorney of Record  
Registration No. 25,599

Customer Number

**22850**

Tel: (703) 413-3000  
Fax: (703) 413 -2220  
(OSMMN 08/07)

Edward W. Tracy, Jr.  
Registration No. 47,998